



THE MOST ADVANCED NAME IN DRAINAGE SYSTEMS



**RE: TESTING OF (3) SAMPLES LUDLOW 450 MM (18") DIAMETER
SMOOTHWALL TYPE 'S' POLYETHYLENE PIPE TO AASHTO M294M-
04 FOR THE ESC PROGRAM**

CONDITIONING: Not less than 40 hours at $23 \pm 2^{\circ} \text{C}$ (73°F)

TEST RESULTS:

SECTION 6.1 BASIC MATERIALS

Results:

Sample	DENSITY (g/cm ³)	MELT INDEX (g/10 minutes)	CARBON
ADS	.953	.15	2.53%
TRI	.952	.25	3.50%

SPECIFICATION: Minimum Cell Class 335400C and SP-NCTL 15% 24hours
Density .945 to .955 g/cm³
Melt index .15 to .40 g/10 min.
Carbon Black Content 2% minimum / 5% Maximum
*Compounds that have a higher cell classification in one or more properties with the exception of density are acceptable provided product requirements are met.

CONCLUSIONS: Specification is met.

SECTION 7.1 WORKMANSHIP

SAMPLE	RESULTS
ADS	Pass
TRI	Pass

SPECIFICATION: Free of foreign inclusions and visible defects. Inner liner shall be fused to outer corrugated wall at all internal corrugation crests.

CONCLUSIONS: Specification is met.

SECTION 7.2 PIPE DIMENSIONS
SECTION 7.2.2 WALL THICKNESS

SAMPLE	Inner Wall Thickness
ADS	0.063"
TRI	0.066"

SPECIFICATION : The minimum inner wall thickness requirement is 1.3mm
0.051"

CONCLUSIONS: Specification is met.

SECTION 7.2.3 INSIDE DIAMETER

Sample	INSIDE DIAMETER
ADS	18.08"
TRI	18.00"

SPECIFICATION: Nominal inside diameter shall not exceed 4.5% oversize or
1.5% undersize and not more than 30mm oversize. 443.25 mm / 410.25 mm
(17.45" / 18.51")

CONCLUSIONS: Specification is met.

SECTION 7.4 PIPE STIFFNESS

Sample	Orientation	Pipe Stiffness
ADS	0 / 45 / 90	45 / 46 / 45
TRI	0 / 45 / 90	43 / 45 / 44

SPECIFICATION: Minimum pipe stiffness requirement at 5% deflection is
275kPa (40PSI)

CONCLUSIONS: Specification is met.

SECTION 7.5 PIPE FLATTENING

Sample	Results
ADS	Pass
TRI	Pass

SPECIFICATIONS: No evidence of buckling, cracking, splitting or delamination.
when the vertical inside diameter is reduced by 20%.

CONCLUSIONS: Specification is met.

Section 7.6 ENVIRONMENTAL STRESS CRACKING

Sample	Results
ADS	Pass
TRI	Pass

SPECIFICATIONS: There shall be no cracking of the pipe.

CONCLUSIONS: Specification is met.

SECTION 7.7 BRITTLENESS

Sample	Results
ADS	Pass
TRI	Pass

SPECIFICATION: The pipe specimens shall not crack or split.
Five non-failures out of six impacts will be acceptable.

CONCLUSIONS: Specification is met.

SECTION 7.8 FITTING REQUIREMENTS

Sample	Results
ADS	Pass
TRI	Pass

SPECIFICATIONS: Pipe connections shall not separate to create a gap exceeding 5mm. (0.197") when measured between the bell and spigot portions of pipe fittings shall not crack or delaminate.

CONCLUSIONS: Specification is met.

SECTION 11 MARKING

Sample	MFG	SIZE	PLANT CODE	PRODUCTION DATE
ADS	ADS	18" 450mm	36 (Ludlow)	03/08/06
TRI	ADS	18" 450mm	36 (Ludlow)	03/08/06

SPECIFICATION: Pipe and fitting shall be marked at intervals not more than 3.5m, manufacture's name or trademark, nominal size, AASHTO M294, plant code and date of manufacture of appropriate code.

CONCLUSIONS: Specification is met.

Terry McElfresh
Quality Control Manager